

USDA

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Subject: ***Nectria Surveying on the ANF***

To: Bob White

The First Nectria Survey.

Between the 13th and 15th of November 2001 I conducted a *Nectria* survey in two areas of the ANF. Earlier in the year, while conducting the annual ANF defoliation survey, I had observed an area of the BBD killing front in the Tionesta Natural Area and made a note to survey it for *Nectria*. The stand in question is dominated by two species, American beech and eastern hemlock. Despite the fact that many of the beech trees were whitewashed with the beech scale, I failed to detect a single *Nectria* peritheциum. Knowing that a year earlier (11/14/2000) *Necrtia* had fruited on 5 of 189 living trees in the two remaining Houston BBD plots, I returned to those plots and resurveyed them for *Nectria*. To my surprise, I could only find *Nectria* on the same 5 trees as noted in 2000. While I initially was suspecting some form of biological control of *Nectria* by the fungal hyperparasite *Nematogonum ferrugineum*, Don Scronek & Stan Kobielski, of the Bradford Ranger District, suggested drought. Thus I decided to wait for a few days of rain and return to resurvey for *Nectria*.

The Second Nectria Survey.

Between December 3rd and 6th Bill Jones and I repeated the *Nectria* survey. This time we were successful. In the two Houston BBD plots *Nectria* was found on 7x as many trees as previously. In plot 1 the *Nectria* count went up from 6½ % to 31½ % of living trees, and in plot 3 the change was from 0% to 15V2 %. While the Army Corp of Engineers has a rain gauge at the Kinza Dam there had apparently been a recent minor problem with it and they felt more comfortable providing me with daily rainfall data from their station at Allegheny State Park. Additionally, I found a web site that lists the weekly rainfall at the Kane Experimental Forest. These data support the local observations of Don Scronek & Stan Kobielski, namely, that there had been very little rain in the two weeks prior to the first survey and significantly more in the two weeks prior to the second survey. Clearly it is easier to find *Nectria* after the rain.

Tionesta Natural Area

However, none of this explains why I could not find *Nectria* in the Tionesta Natural Area. On an over-flight of the area I was convinced that the area is on the killing front and ground truthing leads me to expect that many of the beech trees are indeed dying. I observed that there was no evidence of beech snap and very few trees had any cankerling or *Fomes fomentarius* conks. (*Ganoderma tsugae* and *Fomitopsis pinicola* conks were evident on several old and mature hemlock trees in the stand. On one occasion a *Fomitopsis pinicola* conk was observed on a Black Cherry tree. It is interesting to note that a fungus best known, in the West, for recycling conifers would decay, recycle, both hardwoods and conifers in the East. I wonder if the fungus is truly the same fungus as found in the West?).

Observations of the Houston BBD plots

The Houston BBD plots are located well behind the killing front and although the two surveyed here are only a short distance apart they are in vastly different states of health. Plot 1 has on average smaller diameter trees and although they have significant amounts of canker the level of beech snap is much lower than in plot 3. In contrast, plot 3 with its larger trees has a canopy that is "falling apart". Besides beech sprouts there is significant hemlock seedling regeneration. While BBD will not eliminate beech from the next rotation it might increase the hemlock component.

I suspect these differences reflect the different states of development the stands were in when the disease first swept through the area. Plot 1 is in a stand that was in a younger stage of development when the disease arrived. Plot 3 is in a stand that was dominated by mature trees when the disease arrived. Both beech snap and mortality seem to have progressed more rapidly in the older stand. (The un-assessed plot 2 was the victim of increasing natural gas prices and was destined to become the site of a new gas well.) Thus I conclude that the short run impact of BBD will vary not only with the length of exposure to the disease but also upon the state of development of the stand when it first becomes impacted. In the long run stand development will not alter the final BBD impact.

In the search for natural resistance to BBD the attached plot sheets should prove to be of some value. For the trees colour coded green in the sheets had no record of either scale or Nectria (in 2000). It would be interesting to see if any of these trees had a historical record of being scale free. If so, then these are the trees whose stump sprouts we should favor in the next stand.

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